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[October 10, 2020]

System Request

Project Name: Social Media Sentiment Analysis

Business Need:

- ❖ **Evaluate Product Release/ Increase Product Quality:**
    - ➢ Businesses need to know how the public feels about the new products they release. Analysing sentiment can lead to finding changes that will make the product better suit customer needs

- ❖ **Enhanced Customer Service:**
    - ➢ Constant monitoring of sentiments on social media can help businesses be better in sync with customer feedback. Customers will feel like they are being heard

- ❖ **Crisis Management:**
    - ➢ Constant monitoring of sentiments on social media can help detect signs of extreme dissatisfaction with products and help avert possible sales disasters

- ❖ **More accurate Market Predictions:**
    - ➢ Change in sentiments on social media have been shown to be correlated with changes in capital market security prices. Can help asset management companies make better decisions and more profitable investments

- ❖ **Competitor Tracking/Analysis**
    - ➢ Businesses need to know how their products are performing versus their competitor's products. Sentiment analysis can help gauge how customers feel towards competitor products.

Functionality:

- Sentiment Analysis on Twitter tweets

- Tweets categorized by 5 categories: Very Negative, Moderately Negative, Neutral, Moderately Positive, Very Positive
- Data Scraping will be done using either Tweepy or GetOldTweets3 libraries
- Natural Language Processing to analyze tweets

Expected Value:

Tangible:

❖ According to statistics, 46% of people have opted to use social media to extend their complaints to the intended company. Thanks to sentiment analysis, the complaints received can be identified, categorized according to the seriousness of the complaint and resolved in an arranged manner.

➢ **Sentiment Score**: Provide quantitative measurements of the sentiments embedded in certain tweets.

➢ **Track customer perception**: For example,if positive mentions of your products have gone **up** by 15% year-on-year, it's clear you're doing something right.

➢ **Step-up customer service:** If positive mentions of your company have gone **down** by a certain percentage year-on-year, you could try to figure out a solution on how to improve your services by stepping up your customer experience. For example, if customers are constantly complaining about your company's refund policy, sentiment analysis could help provide insight and improve customer services

➢ **Plan Product Improvements**: The sentiment analysis performed while classifying the customers' responses enable the organizations to understand their thoughts or feelings towards the brand, which helps in performing market research and improving the product or service

➢ **Prevent an upcoming business crisis**: Use the feedback, especially when negative, to prevent huge business loss, and to improve your product before hitting a huge loss stage.

Intangible:

- Provide Clarity upon the needs and want of society, whether that would be in a corporate setting(consumer-demand) or Local Government Departments gauging public sentiments towards services.
- As well as universities using sentiments analysis to address any areas of student dissatisfaction.

Special Issues or Constraints:

- **Experience vs Inexperience :** We are all experienced in Machine Learning, but we usually don't do as much of data scraping, therefore this part will be hard and we will have to focus on more.
- **Natural Language Processing:** One special issue that we might face is trying to interpret the language. Since we are dealing with Natural Language Processing, the algorithm might misinterpret some tweets. For example "My flight with Delta just got canceled! Amazing" could be classified as a positive tweet for Delta airline even though it is the opposite. So one concern and challenge is that it is hard for a machine to detect sarcastic tweets.
- **Delivers and Platforms:** This project will be focused on social media analysis and interpreting, and therefore for now we need to focus on one social media platform that is open source and easily accessible. Therefore we will be using twitter for now, as we will be scraping data from there. Scraping data from twitter is faster and more doable over a short period of time. In the future we will expand on this project by using other social media platforms, such as Facebook, Instagram, and youtube. For the mean time this seems as intangible because data scraping from those social media platforms require more time, other approaches, and different algorithm tackling. Therefore it is intangible to explore all of other media platforms by the end of this semester, so will keep our focus on twitter.